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## **FROM CARER TO CARERPLUS: THE TRANSLATION OF A DIGITAL COMPETENCE FRAMEWORK INTO A BLENDED MOBILE LEARNING PROGRAMME FOR THE DOMICILIARY CARE SECTOR**

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### **Abstract**

This paper outlines the processes and challenges involved in the translation of a digital competence framework designed for the care sector into a coherent blended learning programme for carers and care workers across Europe. The work here describes the digital competence mapping processes deployed to develop the curriculum and learning architecture for the CarerPlus programme. It employs Bruner's notion of the spiral curriculum and is built around an activity-based pedagogy to promote significant learning gains. The programme comprises several interrelated courses that target the development of digital competences in the domain of social care interventions with ICTs, professionalization and the enhancement of the quality of life of care recipients. This work has been carried out under the European funded CarerPlus project that is situated against a background of the aging demographic across Europe. The two central aims are: (a) to provide a pathway for the development and professionalization of care workers through the acquisition of a set of digital competences; (b) to combat social exclusion in older persons through their care context, utilising newly acquired digital skills and knowledge.

### **Introduction**

The CarerPlus project is set against a background of an ageing European demographic. Figures indicate that by 2050 the ratio of older persons to those with capacity to work will have increased to 53 senior citizens per 100 Europeans of working age (Münz, 2007). This upward shift can be linked to improved healthcare and efficacy of medical treatments that have extended life expectancy for the majority of the population across the European states. The result has been an increased pressure on social and medical support systems to cope with an aging population. To help mitigate these pressures, there has been an effort to increase the autonomy and independence of older people, for example by taking measures to support older persons in their homes rather than refer them too swiftly to the medical care system.. This is an obvious solution but not one that is easy to achieve, and we must be wary of creating an environment that perpetuates a state of social exclusion (Selwyn 2004, 2006; Warschauer,

2004) where the older population become “prisoners” in their homes. It is vital that we continue to find ways to keep older people active and independent within society, through connections with their family, friends and community.

Recent research has shown that a large proportion of the older population in Europe can be encouraged to use technology-based services. It indicates that modern ICTs (Information and Communication Technologies) and AAL (Ambient Assisted Living) technologies can support ageing in the community and at home, with the result of radically improving quality of life. A key mediator between ICT-based opportunities for ageing well in the home and their integration into older people’s lives, lies in the available human resource represented by the domiciliary care workers and the set of digital competences they possess.

As the recently commissioned UK ‘Crossroads’ report summarises:

*The Internet is an important tool for carers, which can help to improve their ability to care, and increasing internet usage presents an ideal opportunity for service providers to reach a wider audience. Different carers have different needs and no one solution or type of website will suit everyone, so it is important to consider all the issues involved in offering online support and to weigh the advantages and disadvantages of each type of website. (Crossroads Report, 2011. p9)*

Another study, in the context of the CARICT project, has illustrated the diversity as well as complexity of this domain. Fifty two ICT-based initiatives for caregivers in Europe were analysed (Schmidt et al., 2011) and from the evidence gathered it was concluded that ICT-based services empower both care recipients and carers and improve their quality of life. This was achievable at reasonable cost and did not dehumanise the subjects in question (Carretero et al., 2012).

There are two key aims for the European funded CarerPlus project that are of significance against this background of an ageing European demographic. First, to provide a pathway for the development and professionalization of care workers through the acquisition of a set of digital competences; second, for the care worker to play a central role in combating social exclusion in older persons through the care context, utilising and passing on the newly acquired digital skills and knowledge.

Two of the key CarerPlus project actions have been first, to derive an empirically grounded digital competence framework for the care worker context and secondly, to then translate this into a blended mobile learning programme. This has provided an opportunity for innovation in the form of exploring the use of micro-certification via the use of a badging system that can scaffold a fully accredited programme offering. The goal is to exploit the synergy between (a) the care worker – building their professional profile through digital competence acquisition based on authentic activity and (b) interaction with the older person (care recipient) – resulting in enhancement of the digital skillset of the care recipient.

## Methodology

The principle stages (Figure 1) in the development of the CarerPlus programme are reported here and described under four different phases.

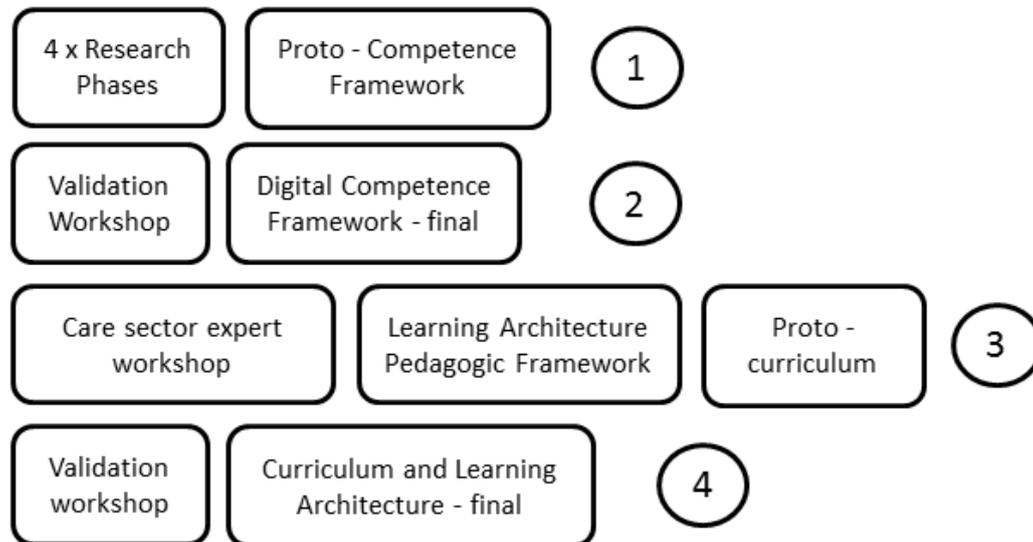


Figure 1. An outline of the principle stages (1 to 4) in the development of the CarerPlus programme detailing the production of the digital competence framework and the definition of the curriculum and learning architecture.

### ***Development of the proto competence framework***

Four research phases were designed to investigate the relevance of digital competences in the care sector, as well as to identify the digital knowledge and skills likely to emerge within care workers' activities in the near future. These comprised: (i) a literature analysis; (ii) expert focus groups; (iii) semi-structured individual interviews with experts; (iv) questionnaire delivered to care workers and caregivers. The detail of this work has been previously reported in Valenta et al. (2013). The results of these activities led to the development of a proto digital competence framework.

### ***Validation of final digital competence framework***

The proto digital competence framework was subjected to a one-day critical review workshop with invited experts who were drawn together to interrogate the three core domains of the framework: general digital competence; enabling digital competence in care; care specific digital competence.

### ***Course mapping and learning architecture creation for the programme***

A care sector experts' workshop with trainers was used to build an initial framework for the CarerPlus programme elements. This drew on interview statements from carers and care workers, the elements of the proto digital competence framework and the input of the

experience of the experts. The aim was to generate and map out the curriculum themes to create the overall shape and format of the programme. During this stage the philosophy and principles of the design were articulated for an initial instructional design approach.

### ***Validation of final learning architecture and curriculum***

A validation workshop was used to critically analyse the shape and contents of the whole programme. This brought together expert viewpoints from across the sector. These conversations were used to identify core themes and structure and scaffold the remapping of the curriculum against the digital competence framework, with the aim of achieving closer correspondence between the two.

## **Results**

### ***Outcomes from Stages 1 and 2***

The digital competence framework (Figure 2) was the main outcome of stages 1 and 2 of the methodology described above. It covers three core competence domains as follows:

1. General digital competence – these are baseline, or foundational, competences that are adapted from the significant work of Ferrari (2012) and colleagues from the DIGCOMP project (Ferrari, 2013). It covers identified competences under the four organising themes of information, communication, content creation and safety.
2. Enabling digital competence in care – this covers competences that are grouped under the four themes of acceptance, adaptation, progression and support.
3. Care-specific digital competence – this addresses competences that cover the areas of independent living and social participation for care recipients; personal development and social integration of carers; and care coordination.

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Figure 2. Overview of the CarerPlus digital competence framework (DCF) detailing the three competence domains and associated themes. Circled numbers indicate the total number of individual competences that are grouped under each domain. Each competence is described in terms of knowledge, skills and attitudes and levels of application.

### Outcomes from Stages 3 and 4

The development of the curriculum and learning architecture for the CarerPlus programme has been informed by three complimentary reference points (Figure 3). First, the ground up analysis of interview statements and subsequent association into an organisational map, second the orientation derived from the digital competence framework (DCF), third, the overarching aims and objectives of the CarerPlus project. These reference points have been important in building a programme that can be translated into a catalogue of short, discrete courses that are meaningful to those participating, and capable of delivering a transformative learning experience.

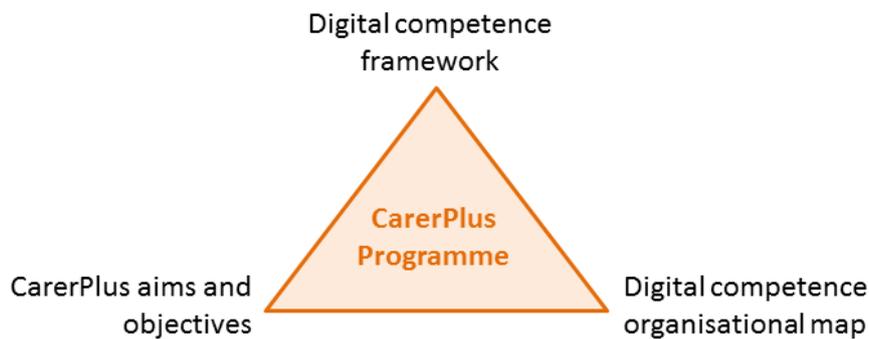


Figure 3. Reference points for the development of the CarerPlus programme based on the CarerPlus project aims and objectives, the digital competence framework (Figure 2) and the digital competence mapping activity (see Figure 5).

### ***Design philosophy***

Building a design philosophy has been an important driver for subsequent course development and is exemplified in the three key principles that have underpinned the approach taken to designing the CarerPlus curriculum and the supporting learning architecture:

1. All learning should be driven by authentic activity (Ormrod, 2004);
2. Basic knowledge skills and attitudes should be revisited in more depth in a 'spiral curriculum' (Bruner, 1960) (Figure 4);
3. Peer support and learning should be encouraged by providing opportunities to share experience.

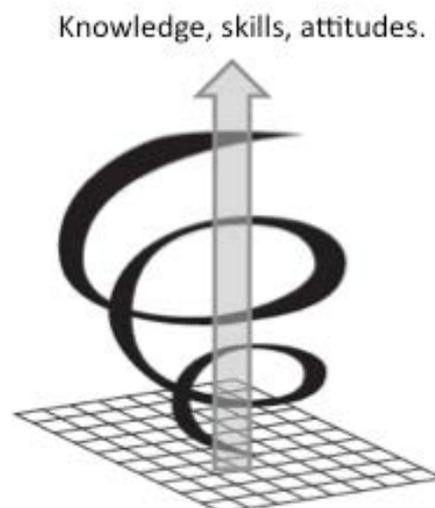


Figure 4. The idea of the spiral curriculum design is that it reinforces knowledge skills and competences at various levels (Bruner, 1960).

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As indicated, the architecture of the programme was developed from the ground up and utilised data from target group interviews collated and analysed by experts. This effort identified discrete but interrelated course areas that would provide a meaningful and authentic scaffolding architecture in which the digital competences in the identified domains can be developed.

The curriculum and learning architecture validation workshop allowed experts to review and suggest the organising themes for the programme and validate the pathways that would be available to participants enrolling on the programme (Figure 5). The resulting programme comprises a total of five courses: two core compulsory courses that must be studied one after the other; followed by three electives in areas of professionalization and the provision of social care interventions. The programme is designed to work in a blended setting with all activities supported by a virtual learning environment and an online, social network community. Each of the individual courses is approximately 35 hours in total and designed to run over a period of eight weeks with short, small group, weekly face-2-face sessions with a mentor. Assessment is via portfolio submission and multiple choice questionnaire completion that also add a formative feedback dimension.

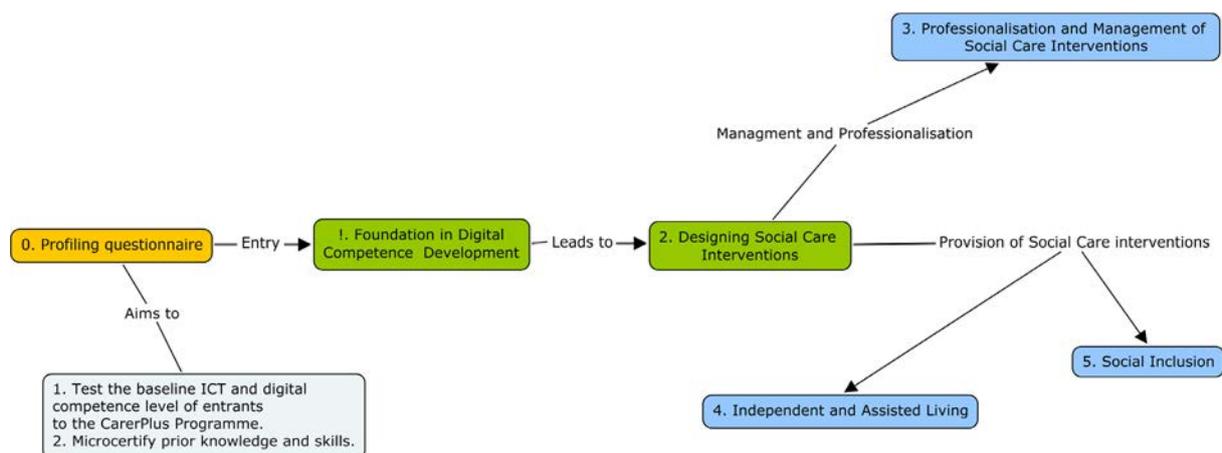


Figure 5. Overview of the CarerPlus programme detailing the core courses (1 & 2) and electives (3, 4 & 5), and the programme entry profiling tool (0).

The five courses cover the following areas:

- **Course 1:** This course covers foundational digital competence and is designed to lead the participants from a novice or beginner state to one where they are confident in both the use of mobile Internet devices, basic applications, security, privacy and digital content. These competences are foundational in that they are used throughout the programme. Much of the activity here relates to the DCF domain of ‘general digital competence’ that is relevant to the development of general ICT literacy
- **Course 2** is the second core course and situates the care worker as a designer of care interventions to develop capability to build and test solutions to identified problems. This knowingly resonates with an action research approach. The course references the DCF domain of enabling digital competence in care that seeks to make the application

of digital technology possible, sustainable and accepted by both care workers and care recipients.

- **Course 3** focuses on the professional development activity of the participants to enhance their competences in the areas of planning, reporting, communicating and networking and professional profile building. It reinforces competences from course 1 and maps into the DCF domain of care-specific digital competence, in particular personal development and social integration of carers that can generate enhanced employability in carers.
- **Course 4** focuses on promoting independent and assisted living. It is orientated towards designing and implementing social care interventions with ICT to support and promote independent living for care recipients. It draws on work already carried out in the foundation course 1 & 2 with a central pillar of the course being enabling the participants to build coherent and manageable intervention plans.
- **Course 5** focuses on ensuring that participants will be able to design and implement ICT based interventions with care recipients that promote opportunities for social inclusion that impact care recipient wellbeing and quality of life and the social participation for care recipients and builds on elements drawn from previous courses.

### **Course development model**

The practical aspects of the course development have been built on the adoption of the iCARE model, based on the Dick and Carey (1978) instructional design model outlined in *'The systematic Design of Instruction'*, pioneered by San Diego State University, and the work documented at Middlesex University (Mojab & Huyck, 2001). In brief, it comprises five design stages titled: Introduction, Connect, Apply, Reflect, and Extend. This model is underpinned by the expectation that individual learning will be scaffolded by digital resources and will drive the self-development of competences. This is strengthened by coupling it to peer supported online activity in the virtual learning environment. The learning design model is one that promotes an active learning pedagogy (Bonwell & Eison, 1991) such that the learning and teaching approach is driven by activities that promote both student engagement with the materials and interaction amongst the learners, reinforcing their development, acquisition and application of digital competences.

### **Discussion**

One of the difficulties in moving from a fully configured [digital] competence framework to a programme structure is evidently not the of choice topic areas but rather balancing the organising themes. Competence frameworks tend to offer linear, categorised breakdowns of the knowledge, skills and attitudes within a domain of practice, often with a professional focus. A tension exists between the emphasis on the 'atomistic' accomplishment of a competence framework and the demands of a learning and teaching programme that will be operating on a more holistic, socially sensitive set-up. Therefore, achieving a balanced approach to both DCF and programme development requires a flexible and reflexive design

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approach, one that oscillates between the DCF and the evolving curriculum and learning architecture. This has been achieved in the CarerPlus project by combining prototype outputs with validation workshops. These have acted as key conversational nodes in an iterative design and development process that has led towards finalised outputs.

The design of the programme has also been sensitive to the learner journey to ensure a coherent path from participant entry, study progress through to the exit trajectory. These three elements have been scaffolded by:

- An entry profiling tool to baseline participant skills and knowledge and to assess their readiness to study and attitudes to ICT use;
- Micro-certification delivered through a badging system that rewards skills acquisition and promotes positive learning behaviours and community activity in the VLE;
- A specific course on professionalization that supports personal development planning and enhancement of the individual's professional status and social capital.

Finally, an important element of sustainability has been built in to the programme through a 'train the trainers' pathway that offers advanced participants an opportunity to become mentors for the programme.

## **Conclusion**

The process of translating a competence framework into a functional programme of meaningful courses for professional development is a challenging one, particularly when the design constraints include considerations for positive impact on both the participants from the target care-sector and the care-recipients. Successful completion of the CarerPlus programme has required bringing together a number of perspectives and reference points that have incorporated expert views from across the sector. Combining this with clearly articulated development and delivery models has been critical to ensure the development of a coherent programme that maps tightly enough to the underlying digital competence framework. The outcomes of the CarerPlus pilot programme will be reported in a later study, following pilots that are running in five European countries. Ultimately the success of this project will be judged on the impact. *For care workers, this impact should comprise an understanding of their own professionalization needs and the acquisition of necessary skills, attitudes and knowledge to enhance their professional profiles; for older people there should be a clear enhancement to their quality of life.*

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